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Remarks

In response to the Advisory Action dated March 12, 2003 the following remarks are made:

In the previous Office Action (dated September 27, 2002), the Examiner rejects claims 1-23 under U.S.C. 102/103 as being “notoriously old”. Claims 1-23 have been deleted without prejudice in the response mailed December 20, 2002, and claims 24-32 have been amended above.

Furthermore, claims 24 to 32 have been amended without prejudice by removing the word “optoelectronic” and replacing it with “electronic”. Support for this amendment can be found on page 1, lines 7-9 of the application.

Claims 24 to 32 have been amended without prejudice by insertion of the word “compact” where indicated so that it is clarified that the label is a “compact label” and the method is a “compact method of labelling”. Basis for this amendment can be found on page 4, line 24 to page 5, line 6 of the application.

35 U.S.C. §102 Rejections

The present invention as claimed in the amended independent claims provides for a electronic component carrier comprising a substrate such as, for example, a semi-conductor material as described in line 10 of page 5 of the application, and an electronic component and a compact label mounted thereon. The label comprises a coded data symbol having a two dimensional array of cells. Furthermore, the invention also provides an electronic device comprising such an electronic component carrier, a compact method of labelling such an electronic component carrier and a vision system for reading a coded data symbol on such an electronic component carrier.

A key feature of this invention is to provide an electronic component carrier having a compact label which, when read, identifies the origin of each component or carrier with which the label is associated. Therefore, the invention provides a label which needs to be disposed on the electronic component or the component carrier on which the electronic component is mounted.

US patent 4,074,114 (Dobras) teaches a barcode in which the bars and spaces used to represent each character are oriented vertically and in which the bar and space combinations used to represent different characters are spaced from one another horizontally, as disclosed in lines 30 to 36 of column 5. Nowhere in this reference does Dobras teach an electronic component carrier comprising a substrate or a compact label, mounted on such a substrate, comprising a coded data symbol having a two dimensional array of cells. Dobras does not in any way disclose the features of the amended independent claims and, therefore, the present invention is not anticipated by Dobras.

US patent 4, 117,975 (Gunn) teaches apparatus for marking and sorting of articles by code or address. This is for use in marking mail wherein a machine code marks a stamp label which is then applied to a letter or parcel. In no way does Gunn disclose an electronic component carrier comprising a substrate, an electronic component and a compact label. Therefore, Gunn does not in any way anticipate the features of the amended independent claims.

US patent 5,481,103 (Wang) teaches a readable code in a form such as a barcode which can be positioned in arbitrary orders and configurations. This provides large data capacity with relatively low overhead data requirements, a plurality of addressed portions which can be read individually, flexibility in order of data arrangement, flexibility in arrangement in non-rectangular shapes, a relatively large scan angle, and simplified decoding. However, nowhere does Wang disclose an electronic component carrier comprising a substrate on which a component and compact label are mounted, as claimed in the present invention. Therefore, because Wang does not disclose the features as claimed in the amended independent claims, the present invention is not anticipated by Wang.

US patent 6,032,861 (Lemelson et al) teaches a barcode having primary information and secondary information wherein the primary and secondary information are encoded in separate tracks. Lemelson teaches scanning in one direction to read the primary information and another direction to read the secondary information. Nowhere does Lemelson disclose an electronic component carrier comprising a substrate having a component and compact label mounted thereon as claimed in the present invention. Therefore, it is clear that the present invention is not anticipated by Lemelson et al.

US patent 6,176,427 (Antognini et al) teaches a method of formatting digital data and a method of decoding the formatted digital data. Antognini teaches formatting digital data into a pattern wherein the pattern comprises a number of cells with known dimensions where each cell conveys at least one bit of data by expressing at least one of at least two logical states and is provided for by placement of ink on paper. The formatting of the data is to optimize for any particular combination of encoding device and scanner the information which the user wishes to communicate thereto. Antognini does not, in any way, disclose an electronic component carrier having a component and label mounted thereon as claimed in the amended independent claims. Therefore, the present invention is not anticipated by Antognini.

To summarize, the cited references relate to codes, in particular barcodes, and the manipulation thereof to facilitate, for example, improved scanning efficiency in the teachings of Dobras, Wang and Lemelson et al. Gunn provides a coding system utilizing zip codes and telephone numbers to improve efficiency of mail delivery. Antognini et al teaches an improved interface between a computer and a code printed with ink on paper. None of the methods in these references are suitable to work the present invention, as they are not suitable for a compact electronic labelling environment, which is the very essence of the present invention.

It is submitted that since the amended independent claims are not anticipated by the cited references, the claims dependent thereon are also novel and allowable.

35 U.S.C. §103 Rejections

In US 4,074,114 Dobras seeks to overcome disadvantages of known methods of scanning barcodes such as, for example, the user of a scanning stylus not correctly scanning the whole of the code and therefore misreading the data. Similarly, if irregularities are scanned due to, for example, dirt spots or gouges the data is not normally collected by the scanner. These problems usually result in the necessity to repeatedly scan the same barcode a number of times before the encoded data is properly read. Dobras seeks to overcome these disadvantages by providing a system in which the individual encoded characters are each scanned repeatedly by a light sensing linear photo detector array which is arranged to scan in a direction perpendicular to the direction in which the hand held stylus is moved (lines 39 to 44 of column 3).

In US 4,117,975 Gunn seeks to make addressing and sorting of mail more efficient by means of optical detection of a coded grid representing telephone numbers and zip codes of the addressee.

In US 5,481,103 Wang seeks to increase usable scan angle range in relation to 2-D barcodes and in doing so provides new forms of packet codes, and methods and arrangements for encoding and decoding such code forms which enable provision of machine readable images.

In US 6,032,861 Lemelson et al seek to overcome the necessity to provide multiple barcodes for more than one series of information. Lemelson overcomes this problem by providing primary information and secondary information in the same barcode wherein the primary information is scanned in a different direction to the secondary information.

In US 6,176,427 Antognini et al seek to overcome the problems related to the interface between paper and computer processing. Antognini overcomes this problem by providing for placement of ink on paper which formats digital data into a pattern suitable to be scanned into a computer.

If a person skilled in the art of coded labelling would have before them any one of the cited references, or a combination of two or more of any thereof, the skilled person would not be motivated in any way to devise an electronic component carrier as claimed in the present invention. The skilled person, starting from any one of the above-mentioned references, would not be drawn to any others of the references to overcome the problem solved by the present invention.

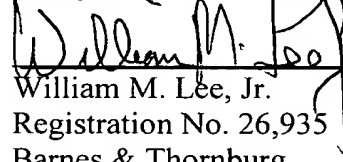
Nowhere in any of the cited references is there suggested use of a compact label in an electronic environment to identify the origin of an electronic component. Furthermore, none of the references either alone or in combination disclose features which are capable of replacing the compact label specified in the claimed electronic component carrier and are therefore incapable of rendering obvious the present invention.

Owing to the size constraints of an electronic component carrier, typically a few millimeters square (this application page 7, lines 18 to 19) with electronic circuitry and components on the surface, it is necessary to use an extremely compact labelling method. A typical label is less than 500 μ m square (this application, page 7, line 24) and in this area it is required to encode data representing, for example, a serial number for the carrier and all the components mounted on it (this application, page 7, line 28 to 29). None of the labels disclosed in the references are capable of such applications and are therefore incapable of working the present invention. Therefore, it is submitted that the claims, as now cast, clearly distinguish from the references.

In view of the fact that all the Examiner's comments have been addressed, further and favorable reconsideration is respectfully requested.

April 10, 2003

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William M. Lee, Jr.", is written over a horizontal line.

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